Topics of Discussion for Technical Goliad Aquifer Exemption Meeting

Stacey Dwyer to: Harry Anthony, charles.maguire, brent.wade 08/14/2012 11:25 AM

Cc: Andy Barrett, William Honker, Wren Stenger, Philip Dellinger, David Gillespie

From: Stacey Dwyer/R6/USEPA/US

To: Harry Anthony <hanthony@uraniumenergy.com>, charles.maguire@tceq.texas.gov, brent.wade@tceq.texas.gov

Cc: Andy Barrett <Andy@thebarrettfirm.com>, William Honker/R6/USEPA/US@EPA, Wren Stenger/R6/USEPA/US@EPA, Philip Dellinger/R6/USEPA/US@EPA, David Gillespie/R6/USEPA/US@EPA

GoliadAquiferExemptionMeetingAgenda 2012 August 16 final.docx ---- EPA Topics of Discussion

Harry and Charles,

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4 wells and church with test results.xls Cross section Maps08022012_00000.pdf Simulated Travel Paths08032012_00000.pdf

UEC Pump Tests 08022012_00000.pdf Aug. 6, 2012 EPA Presentation.doc

Let me know if you have questions.

Thank you,

Stacey B. Dwyer, P.E.
Associate Director
Source Water Protection Branch
U.S. EPA Region 6
214-665-6729 phone
214-665-2191 fax

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Bill Honker- Acting Division Director, Water Quality
Wren Stenger- Acting Deputy Division Director, Water Quality
Stacey Dwyer- Associate Director, Source Water Protection Branch
David Gillespie- Assistant Regional Counsel
Philip Dellinger- Chief, UIC/GW Section
Ray Leissner- Engineer

00607.pdf

Scott Ellinger- Hydrologist

TCEQ
Charles Maguire- Director, Radioactive Materials

UEC
Harry Anthony-Chief Operating Officer
Kennon Goldman- Counsel for UEC
Andy Barrett- Counsel for UEC
Van Kelly- Technical consultant
Craig Holmes - Technical consultant

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Ron Sass- Chemist (potential)

Topic: Goliad Aquifer Technical Discussion

Date: August 16, 2012 from 1-2:30 p.m.

Goal of meeting: Discussion of available data that would help EPA in determining if water wells are currently being used as a source of drinking water.

Attendees: TCEQ, UEC, EPA, Goliad County, Goliad County Groundwater Conservation District

Topic	UEC Data	EPA	Questions for Discussion
2 church wells and Braquet well – are they hydrologically connected to other sands?	Pump Tests	Pump test results were used to show isolation of the A and B sands. However, only two monitoring well results were used to arrive at this conclusion.	Q: There is a fault that runs south of the proposed AE. What is the rationale for extrapolating the results of pump tests across the entire area and assuming that there will be isolation of sands near the church wells considering there is a fault? Q: What data exists to show isolation of the sands considering faults and artificial penetrations in the area? Q: Are there other pump tests or other data that address the connectivity of the A and B sands closer to the water wells?
"Hypothetical well" up gradient of AE	Capture Model	UEC calculated that the capture zone of a "hypothetical" well located up gradient of the AE would only have a capture zone of 16 feet.	Q: What were the assumptions used in the model? Q: What are the ranges of the data values used in the capture zone? Q: How sensitive are the results to changes?
Direction of groundwater movement		Groundwater Gradient data seems inconclusive	Q: Are there other data that address direction of groundwater flow out of the areas of the sands proposed for exemption?

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GROUNDWATER QUALITY

EPA Presentation

8-6-12

Name	Grid #	Well Location: GPS	Testing Entity	Laboratory Used	Date Tested	Well Depth	Chloride	Sulfate	Nitrate	TDS	Arnesic	Iron	Selenium	Uranium	Gross Alpha	Radium 226	Radon 222	Iron Bacteria
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	SARA	12/18/2006	300	129	42		562	0.001		0.005	0.0032	7+/-.7	ND	378+/-149	
Anklam, T	14	28 52.577N 97 21.741W	UEC	Jordan Labs	12/18/2006	300	131	38	2	600	0.001	<.01	0.002	0.003	0	.7+/-.1		
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	B Environmental	4/26/2007	300	132	47	1.2	467	<.02	<.01	<.03					
Anklam, T	14	House Water Filter	GCGCD	B Environmental	4/26/2007						<.05	5.55	<.03					
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	San Antonio T L	10/10/2007													<1
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	SARA	1/20/2009		133	38.7	1.72	575	ND	ND	0.002	0.0033	1.3+/-2.3	.39+/-.17	279+/-60.3	
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	SARA	12/10/2009		127	37.7	1.59	566	ND	ND	0.002	0.0032	3.8+/-2.4	.16+/-.14	160+/-73	
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	SARA	10/26/2010		127	40.3	1.67	566	0.001	0.06	0.002	0.0034	1.7+/-2.5	.11+/-.12	244+/-56.9	
Anklam, T	14	28 52.577N 97 21.741W	GCGCD	SARA	11/16/2011		132	38.2	1.73	554	ND	ND	0.003	0.0031	(-).6+/-3.6	.25+/-.13	380+/-104	
Bluntzer, O	14	28 51.818N 97 19.802W	GCGCD	SARA	12/18/2006	122	34	21		468	0.007		0.004	0.0016	5.4+/-.7	ND	372+/-147	
Bluntzer, O	14	28 51.818N 97 19.802W	UEC	Jordan Labs	12/18/2006	122	40	19	2.7	455	0.007	0.01	0.001	0.002		.3+/-.1		
Bluntzer, O	14	28 51.818N 97 19.802W	GCGCD	SARA	1/21/2009	122	35.5	16.6	3.37	480	0.008	ND	0.002	0.0014	(-).8+/-1.9	.12+/-.14	317+/-60.4	
Bluntzer, O	14	28 51.818N 97 19.802W	GCGCD	SARA	12/10/2009	122	38.2	14.1	3.65	464	0.007	ND	0.002	0.0013	(-).6+/-1.6	(-).006+/-.12	200+/-67	
Bluntzer, O	14	28 51.818N 97 19.802W	GCGCD	SARA	10/26/2010	122	33.4	16.8	2.6	455	0.007	ND	0.003	0.0014	(-).9+/-1.8	(-).07+/-.08	400+/-69.3	
Bluntzer, O	14	28 51.818N 97 19.802W	GCGCD	SARA	11/15/2011	122	36	13.4	3.16	459	0.007	ND	0.002	0.0012	(-)1+/-3.1	.01+/-.08	484+/-104	
Bluntzer, O	14	585 Bluntzer Road	UEC	Jordan Labs	12/20/2006	old well	56	15	4.9	520	0.008	0.06	0.002	0.001		.7+/-.1		
Duderstadt, C.	14	28 52.53N 97 21.116W	GCGCD	Energy Labs	10/27/2006	50	202	68		830	0.002	0.04	0.006	0.0039	10.4+/-.6	.2+/-.3	241+/-62.2	
Duderstadt, C.	14	28 52.53N 97 21.116W	UEC	Jordan Labs	12/15/2006	50	205	72	21	857	0.002	<.01	0.004	0.002		.3+/-.1		
Duderstadt, C.	14	28 52.528N 97 21.114W	UEC	Jordan Labs	12/15/2006	130	95	27	11	630	0.003	<.01	0.002	0.005		.3+/-.1		
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	SARA	12/15/2006	130	126	27		600	0.003	ND	0.004	0.0045	3.7+/-.5	.4+/-.3	1958+/-58.1	
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	B Environmental	4/26/2007	130	110	42		527	<.02	<.01	<.03					
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	San Antonio TL	10/10/2007	130												9000
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	B Environmental	1/28/2008	130	273	83.2		607	<.01	<.01	<.02					
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	SARA	1/20/2009	130	88	36.5	6	627	0.003	ND	0.004	0.0046	4.5+/-2.9	.17+/-.14	197+/-59.4	
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	SARA	12/10/2009	130	76.3	36.5	3.98	643	0.003	ND	0.004	0.0054	5.2+/-2.8	.1+/-.13	200+/-72	
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	SARA	10/26/2010	130	65.8	23.2	4.95	615	0.004	ND	0.003	0.0062	5+/-2.9	.24+/-.14	164+/-55.7	
Duderstadt, C.	14	28 52.528N 97 21.114W	GCGCD	SARA	11/16/2011	130	76.7	29.8	5.85	613	0.003	ND	0.005	0.0062	3+/-4.4	.24+/-.13	202+/-102	

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EPA Presentation

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Name	Grid #	Well Location: GPS	Testing Entity	Laboratory Used	Date Tested	Well Depth	Chloride	Sulfate	Nitrate	TDS	Arnesic	Iron	Selenium	Uranium	Gross Alpha	Radium 226	Radon 222	Iron Bacteria
Long, T	14	28 51.908N 97 21.716W	GCGCD	SARA	12/18/2006	120	165	58		664	0.002		0.002	0.0038	8+/-.7	.7+/-.3	500+/-154	
Long, T	14	28 51.908N 97 21.716W	UEC	Jordan Labs	12/18/2006	120	173	55	0.6	646	0.002	<.01	0.001	0.003		1.1+/-.1		
Long, T	14	28 51.908N 97 21.716W	GCGCD	B Environmental	4/26/2007	120	158	64	0.7	526	<.02	<.01	<.03					
Long, T	14	28 51.908N 97 21.716W	GCGCD	San Antonio TL	10/10/2007	120												<1
Long, T	14	28 51.908N 97 21.716W	GCGCD	B Environmental	3/31/2008	120	172	55.1	0.65	663	<.01	0.02	<.02	0.0034	14.7+/-2.5	.7+/-.2	545+/-67.6	
Long, T	14	28 51.908N 97 21.716W	GCGCD	SARA	1/20/2009	120	175	55.7	0.451	674	0.002	ND	0.003	0.0032	3.8+/-2.7	.84+/-.23	536+/-62.8	
Long, T	14	28 51.908N 97 21.716W	GCGCD	SARA	12/10/2009	120	133	54.5	0.476	655	0.002	ND	0.002	0.0034	7.1+/-2.9	1+/-.18	610+/-89	
Long, T	14	28 51.908N 97 21.716W	GCGCD	SARA	10/26/2010	120	170	58.6	0.487	667	0.003	ND	0.002	0.0037	7.3+/-3	1.1+/-.24	584+/-81.4	
Long, T	14	28 51.908N 97 21.716W	GCGCD	SARA	11/15/2011	120	172	54.1	0.503	655	0.002	ND	0.003	0.0032	4.5+/-4.5	1.3+/-.23	857+/-110	
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	SARA	10/27/2006	80	109	27	2.73	958	0.009	ND	0.006	0.0034	6.2+/-.6	.4+/-.3	114+/-60.7	
St. Peter's Church	14	28 51.474N 97 20.707W	UEC	Jordan Labs	12/20/2006	80	124	27	3	751	0.008	0.03	0.004	0.003		.2+/-.1		
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	Energy Labs	2/13/2007	80	118	29	2.9	708	0.01		0.007	0.0033	5.3+/-.4	ND	170+/-43.3	
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	B Environmental	3/31/2008	80	151	26	3.63	748	<.01	<.01	<.02	0.0031	4.6+/-1.1	(-).09+/-.09	188+/-63	
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	SARA	1/20/2009	80	138	25.9	3.8	254	0.008	ND	0.005	0.0029	4.9+/-3.5	(-).05+/-.11	191+/-57.5	
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	SARA	12/10/2009	80	170	25.3	3.66	734	0.008	ND	0.005	0.003	.3+/-2.7	.05+/-.07	180+/-69	
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	SARA	10/26/2010	80	113	25.3	3.98	732	0.009	0.03	0.005	0.003	.7+/-3	0(-).1+/-.07	242+/-58	
St. Peter's Church	14	28 51.474N 97 20.707W	GCGCD	SARA	11/15/2011	80	103	23.9	3.58	668	0.008	ND	0.008	0.0028	(-)4+/-4.4	.03+/-.09	253+/-102	
St. Peter's Church	14	28 51.478N 97 20.708W	UEC	Jordan Labs	12/20/2006	96	474	184	10	1510	0.002	<.01	0.005	0.003		.2+/-.1		

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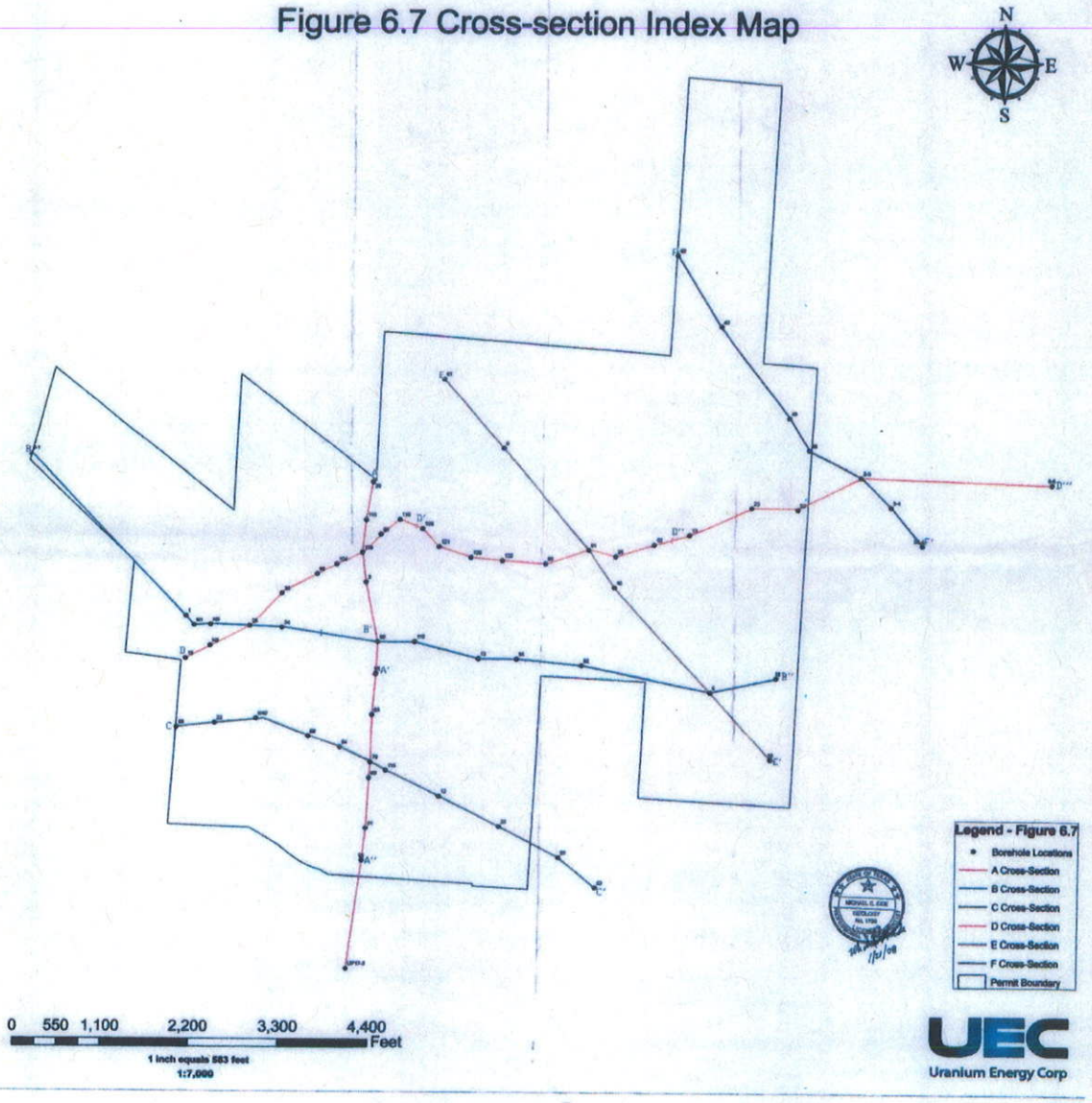
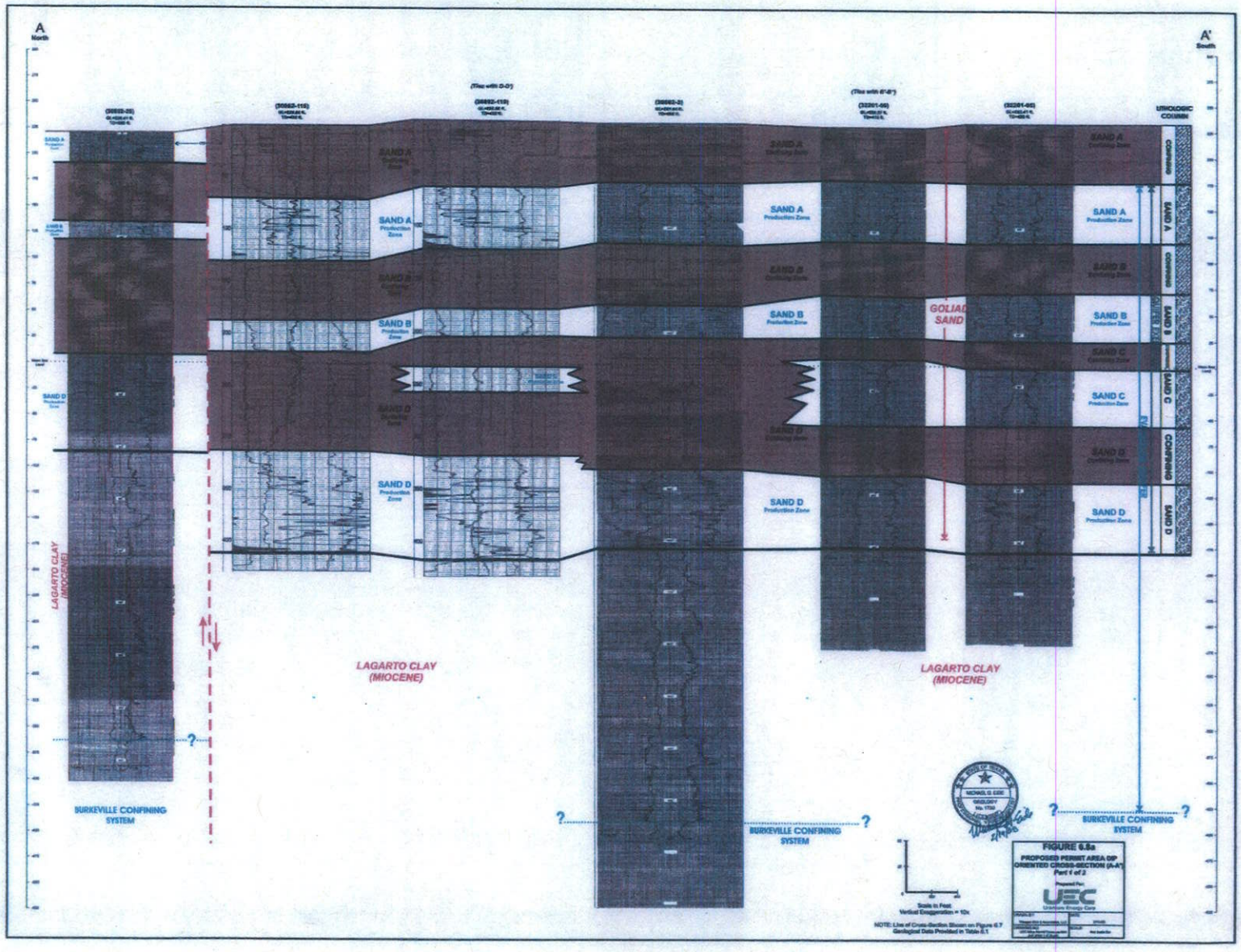
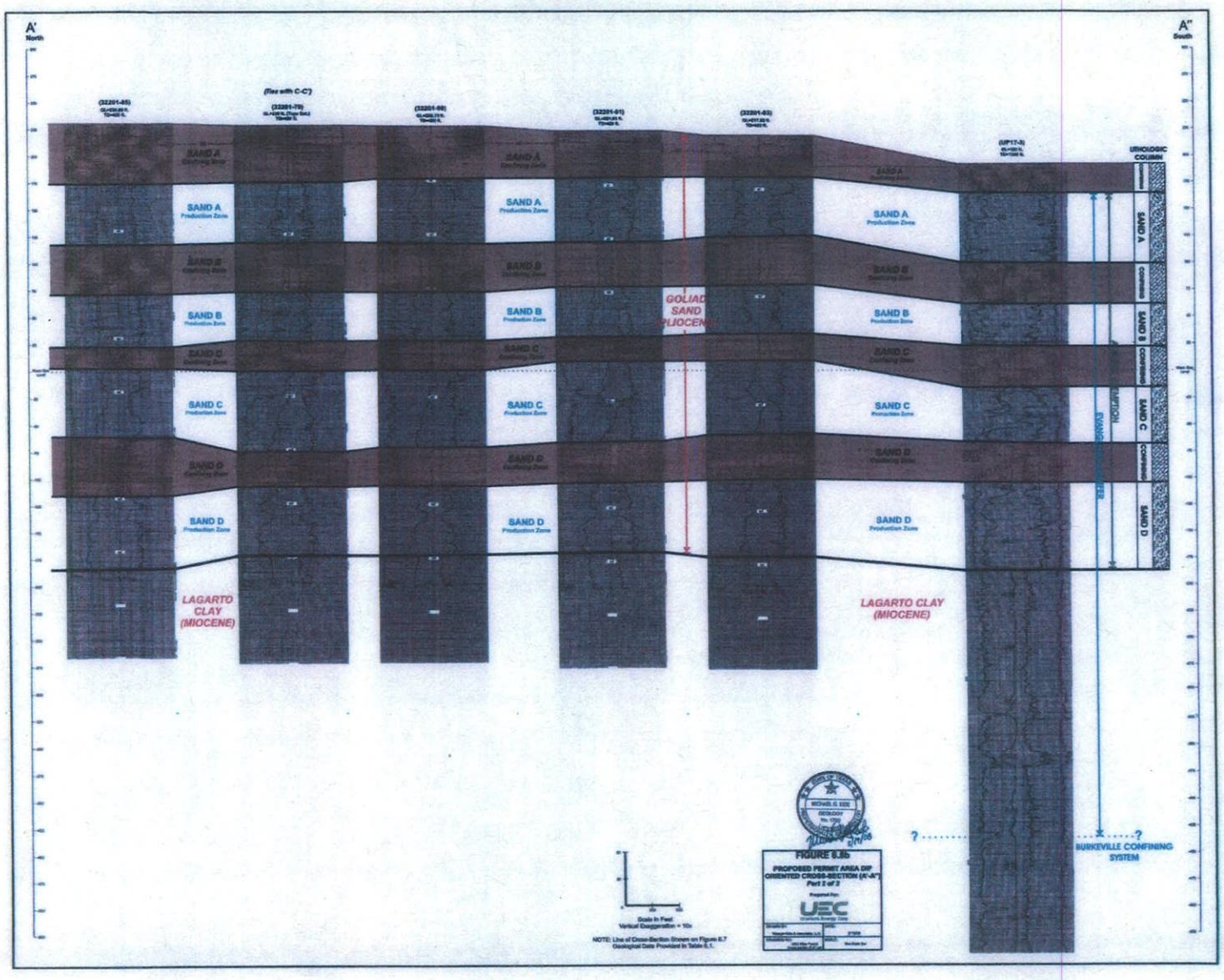
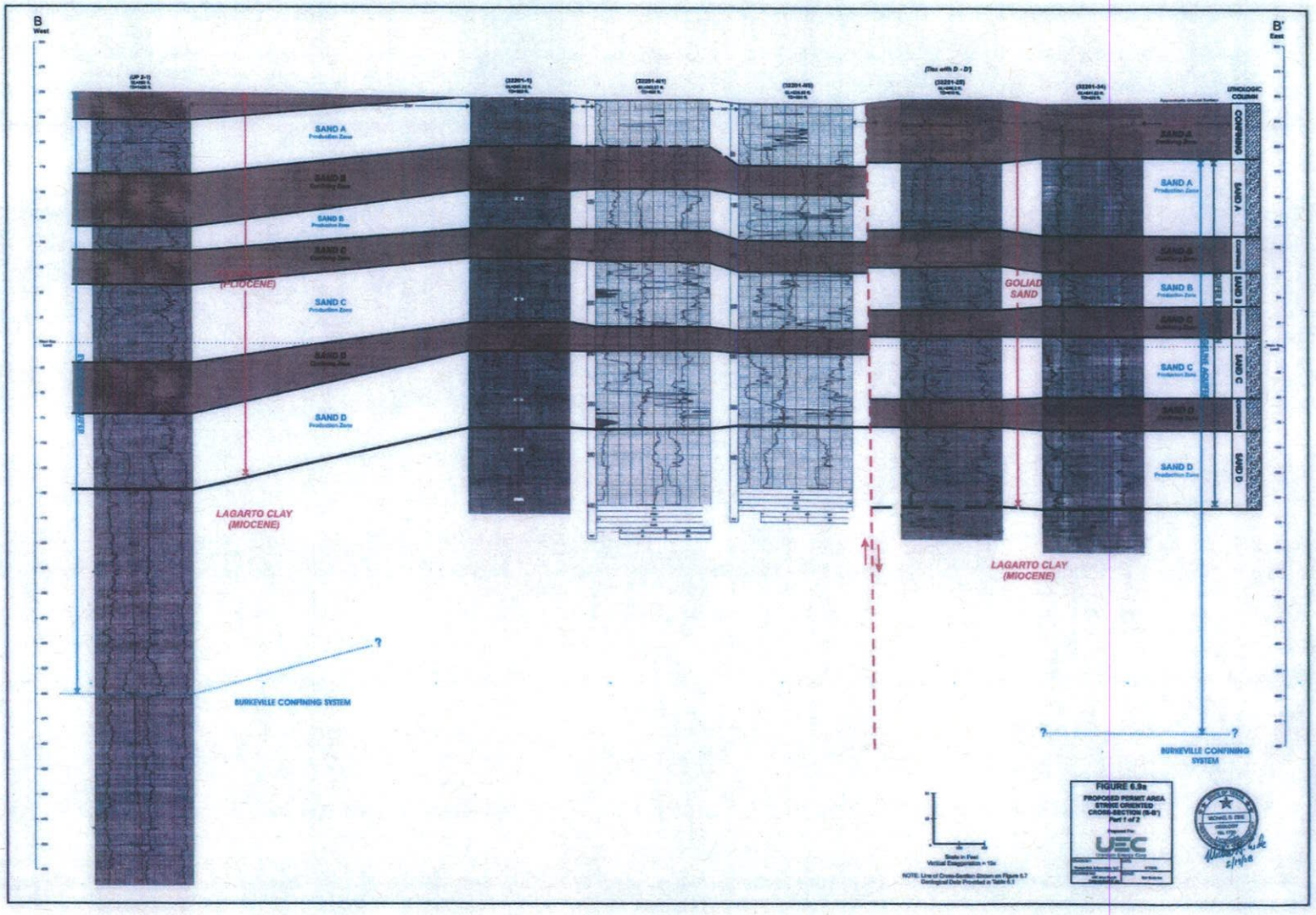
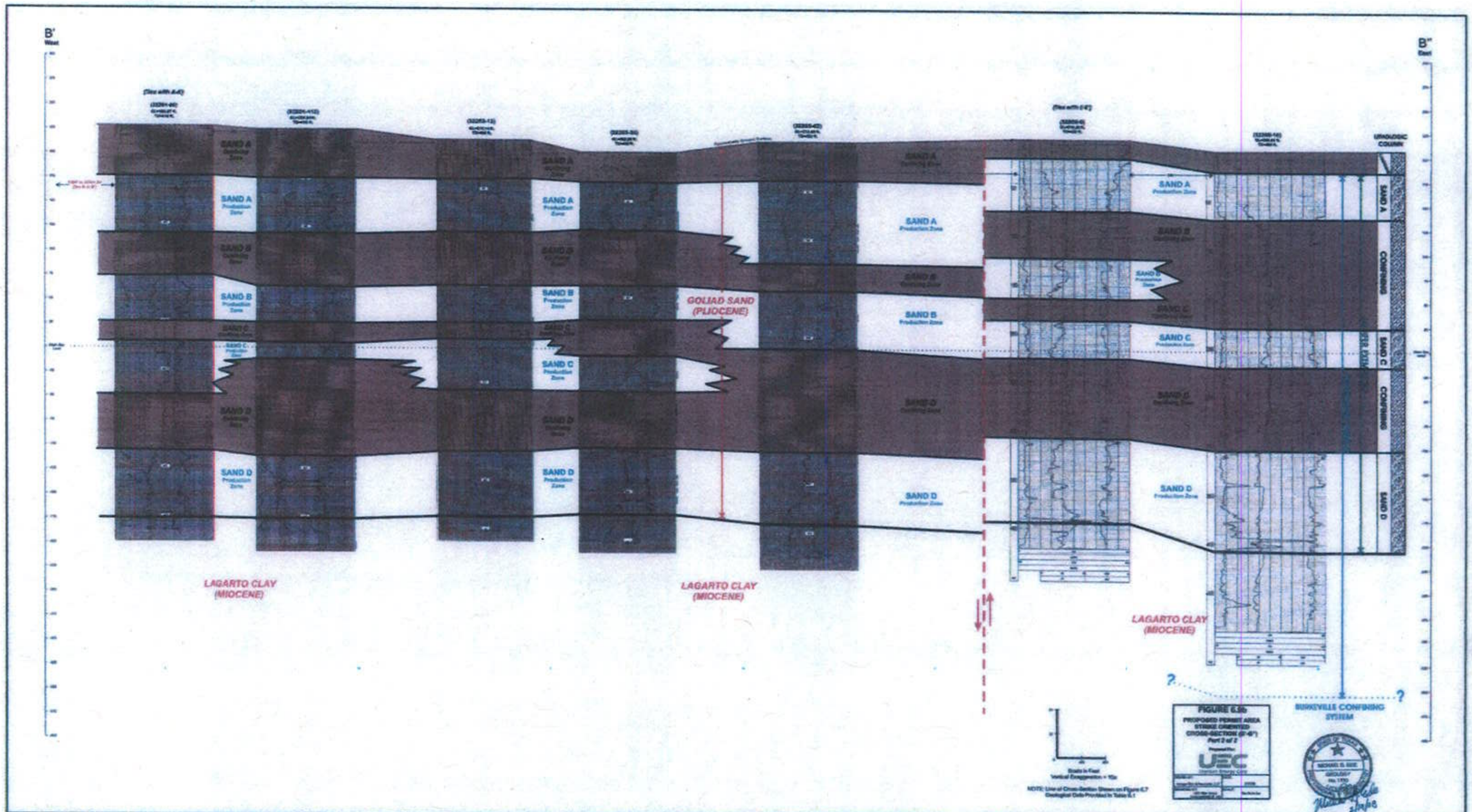
Figure 6.7 Cross-section Index Map



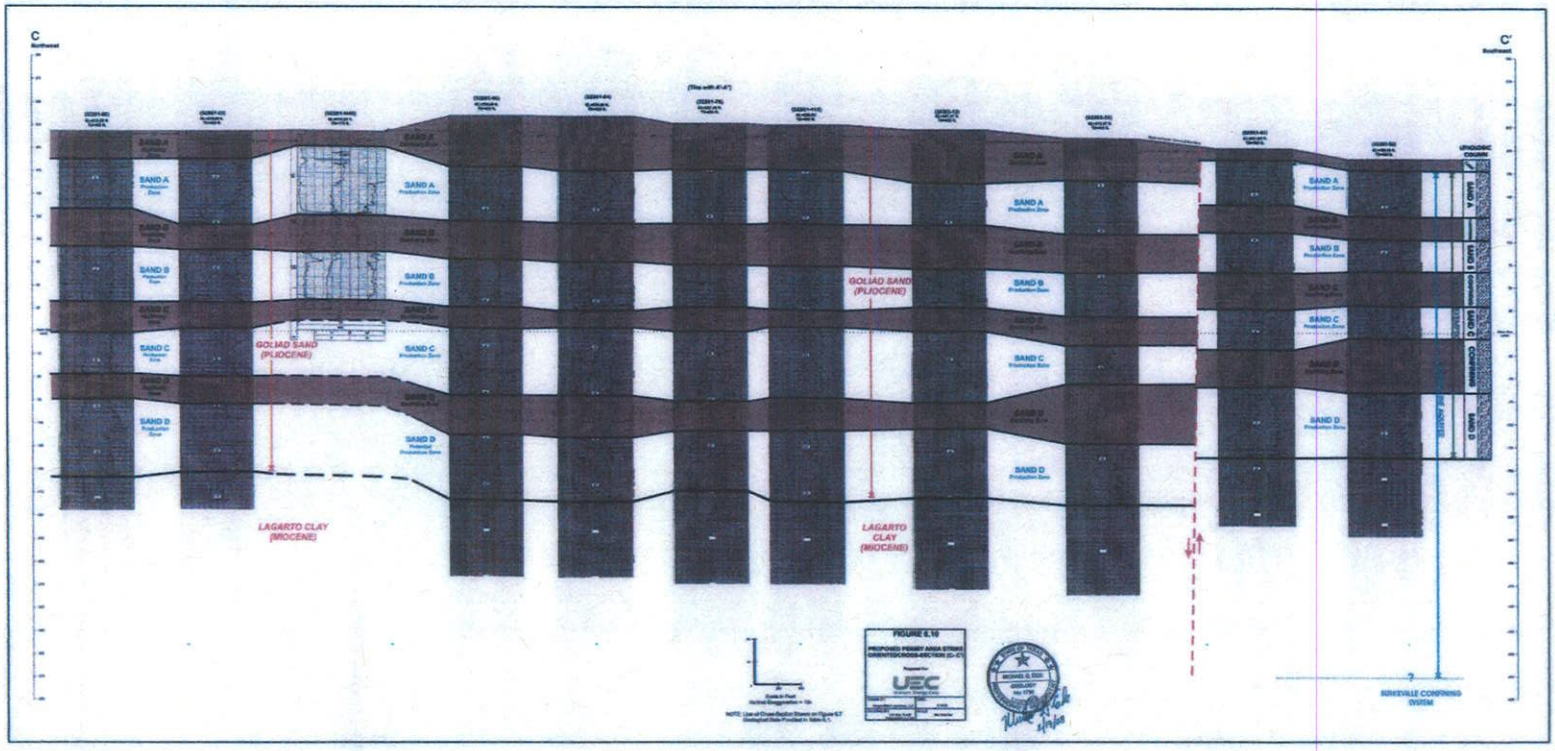

A
North
A'
South
LITHOLOGIC COLUMN
SAND A
SAND B
SAND C
SAND D
CONFINING
SAND A Production Zone
SAND B Production Zone
SAND C Production Zone
SAND D Production Zone
GOLIAD SAND
LAGARTO CLAY (MIOCENE)
LAGARTO CLAY (MIOCENE)
LAGARTO CLAY (MIOCENE)
BURKEVILLE CONFINING SYSTEM
BURKEVILLE CONFINING SYSTEM
BURKEVILLE CONFINING SYSTEM
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 6.7
Geological Data Provided in Table 6.1
FIGURE 6.8a
PROPOSED PERMIT AREA DIP ORIENTED CROSS-SECTION (A-A')
Part 1 of 2
Prepared For:
UEC
Uranium Energy Corp

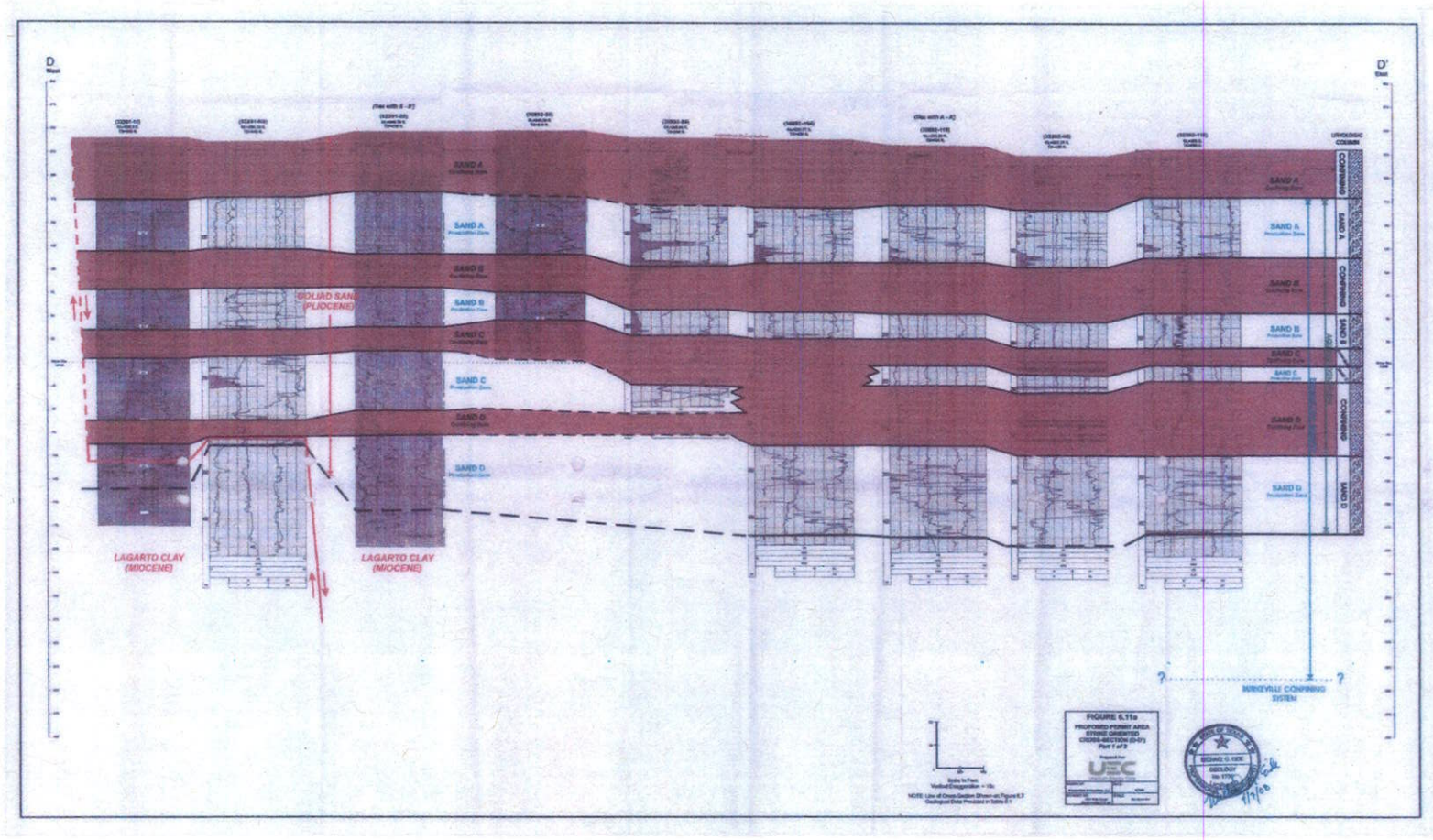

A'
North
A"
South
(tie with C-C')
(32201-85)
(32201-70)
(32201-50)
(32201-51)
(32201-53)
(UP17-3)
LITHOLOGIC COLUMN
SAND A
SAND B
SAND C
SAND D
SAND A Production Zone
SAND B Production Zone
SAND C Production Zone
SAND D Production Zone
SAND A Confining Zone
SAND B Confining Zone
SAND C Confining Zone
SAND D Confining Zone
GOLIAD SAND (PLIOCENE)
LAGARTO CLAY (MIOCENE)
EVANGELINE AQUIFER
BURKEVILLE CONFINING SYSTEM
?
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 6.7
Geological Data Provided in Table 6.1.
MICHAEL G. KEE
GEOLOGY
FIGURE 6.8b
PROPOSED PERMIT AREA DIP ORIENTED CROSS-SECTION (A'-A")
Part 2 of 2
Prepared for:
UEC
Uranium Energy Corp

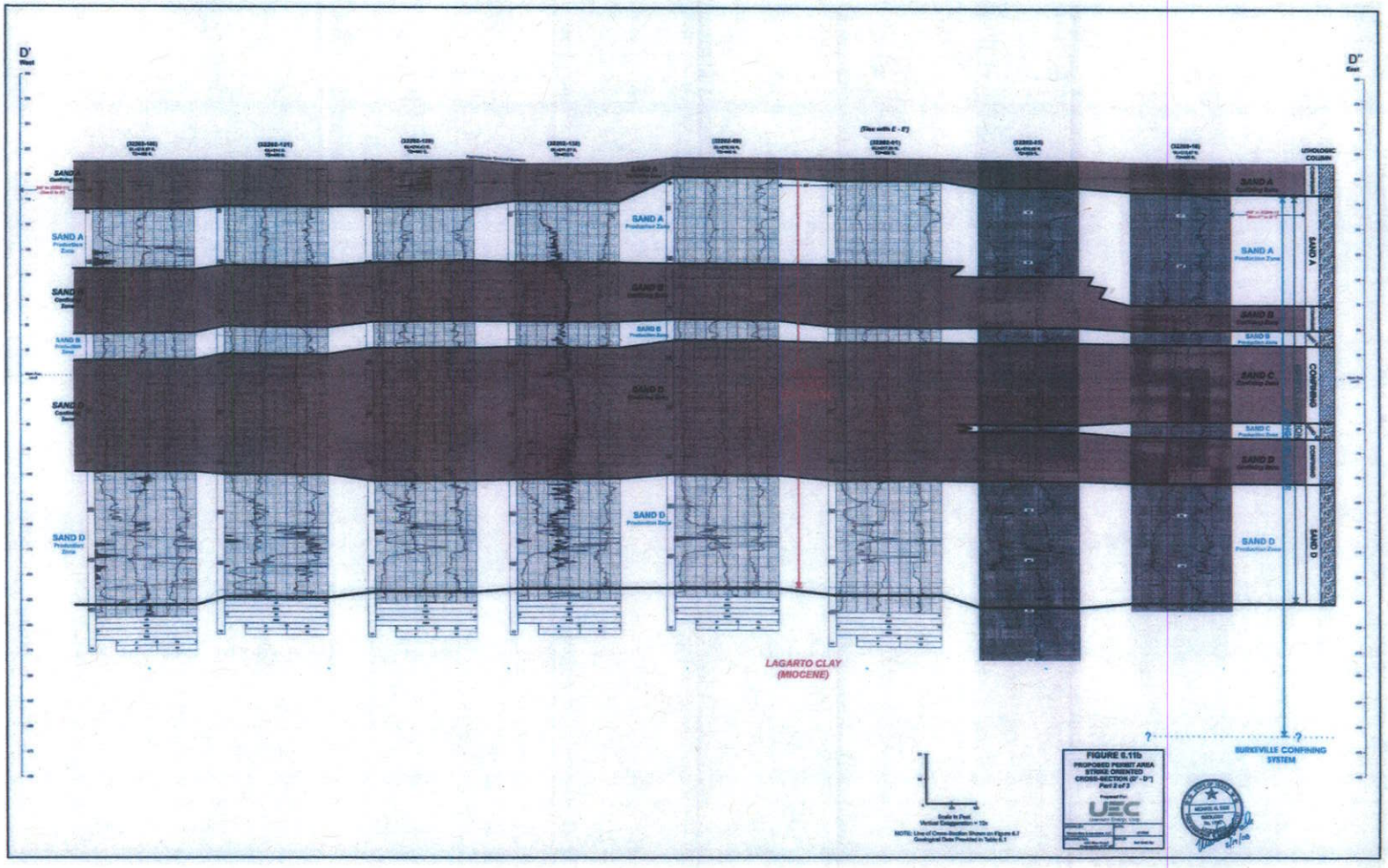

B
West
B'
East
SAND A
Production Zone
SAND B
Confining Zone
SAND C
Production Zone
SAND D
Confining Zone
SAND D
Production Zone
(PLIOCENE)
LAGARTO CLAY
(MIOCENE)
BURKEVILLE CONFINING SYSTEM
GOLIAD
SAND
LAGARTO CLAY
(MIOCENE)
BURKEVILLE CONFINING
SYSTEM
LITHOLOGIC
COLUMN
CHICOT
SAND A
SAND B
SAND C
SAND D
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 6.7
Geological Data Provided in Table 6.1
FIGURE 6.9a
PROPOSED PERMIT AREA
STRIKE ORIENTED
CROSS-SECTION (B-B')
Part 1 of 2
Proposed Plan
UEC
Uranium Energy Corp
5/19/16

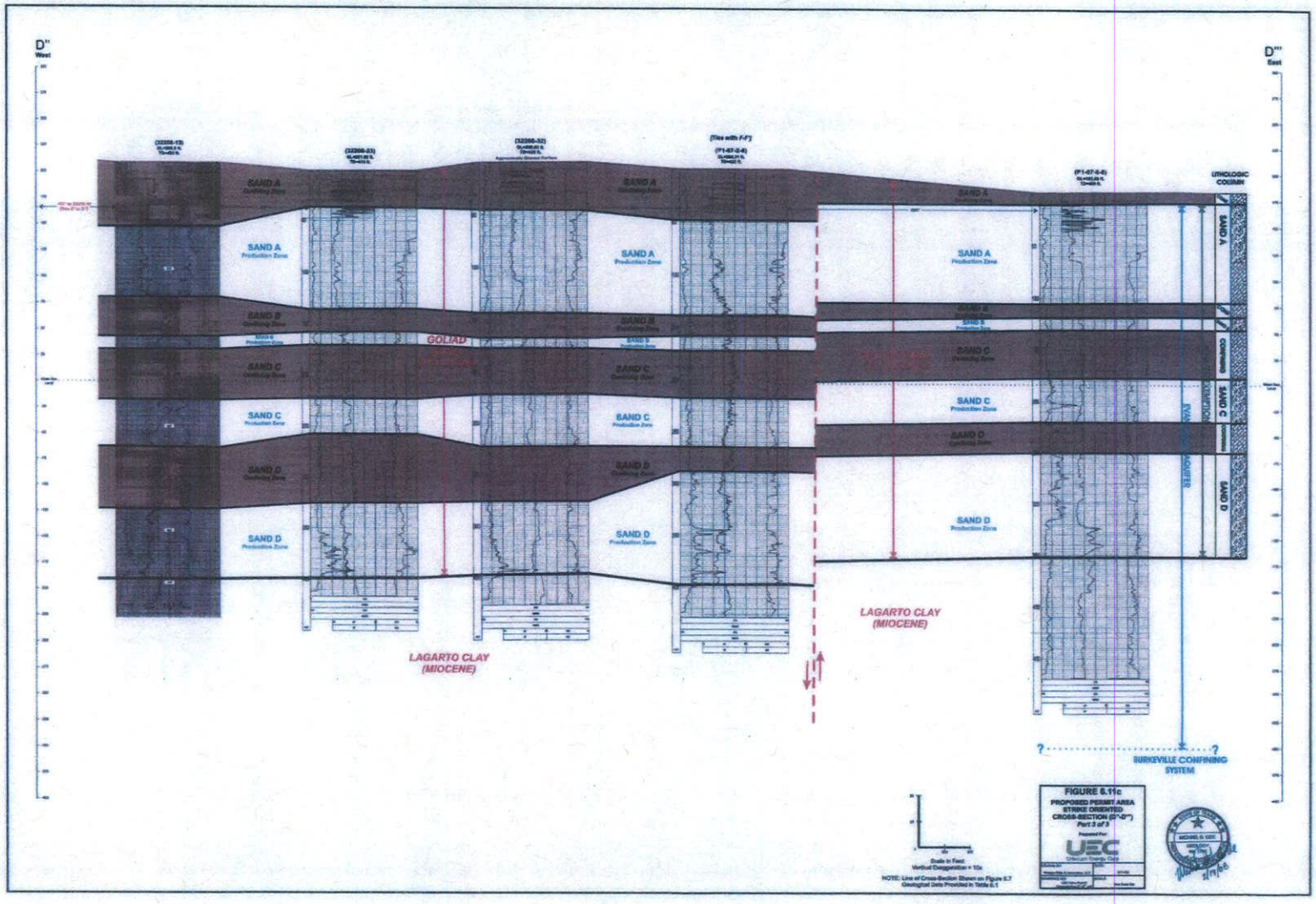


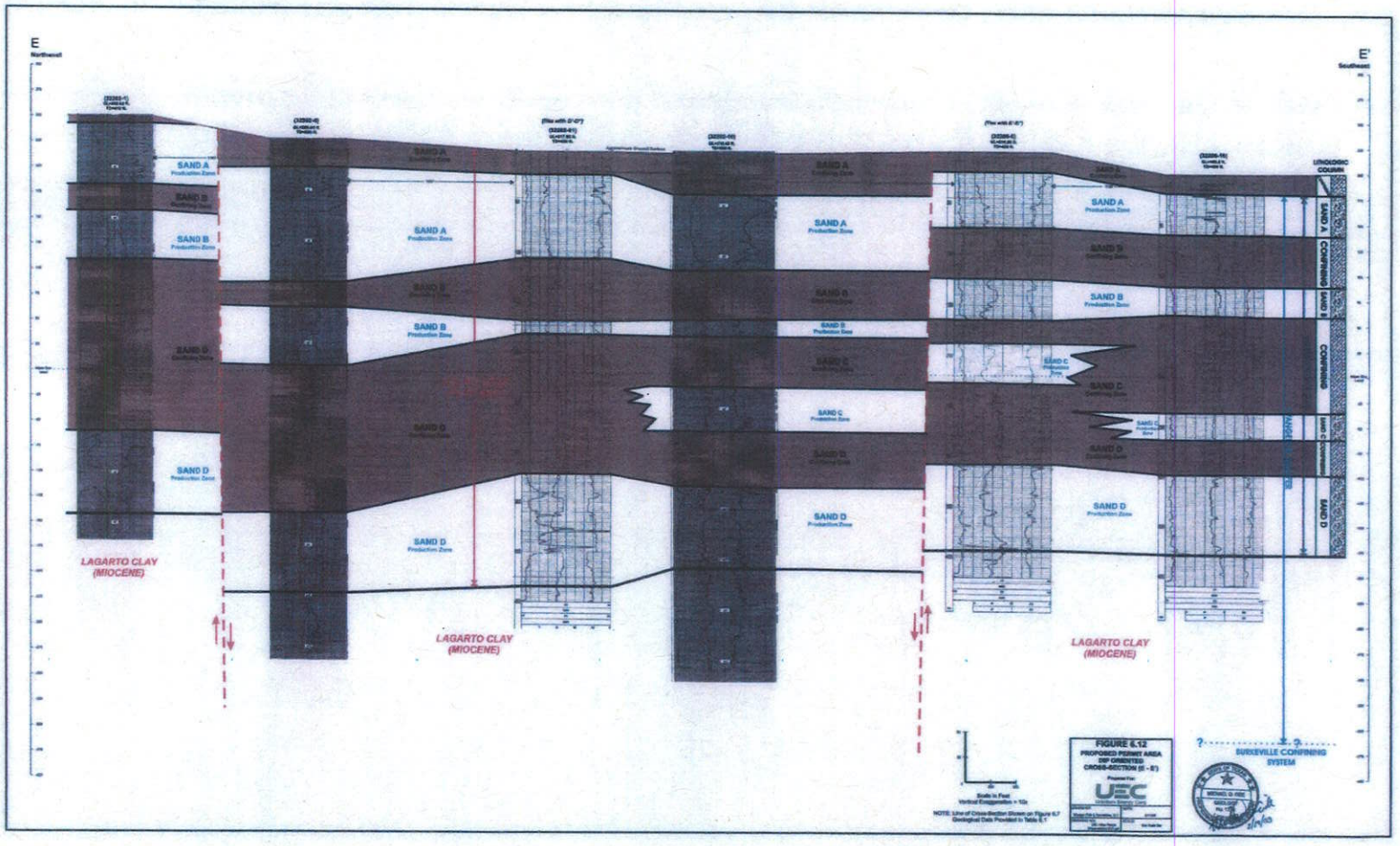
B'
West
B"
East
SAND A
Production Zone
SAND B
Production Zone
SAND C
Production Zone
SAND D
Production Zone
GOLIAD SAND
(PLIOCENE)
LAGARTO CLAY
(MIOCENE)
LAGARTO CLAY
(MIOCENE)
LAGARTO CLAY
(MIOCENE)
SAND A
CONFINING
SAND C
CONFINING
SAND D
BURKEVILLE CONFINING
SYSTEM
PROPOSED PERMIT AREA
STRIKE ORIENTED
CROSS-SECTION (B'-B")
Part 2 of 2
UEC

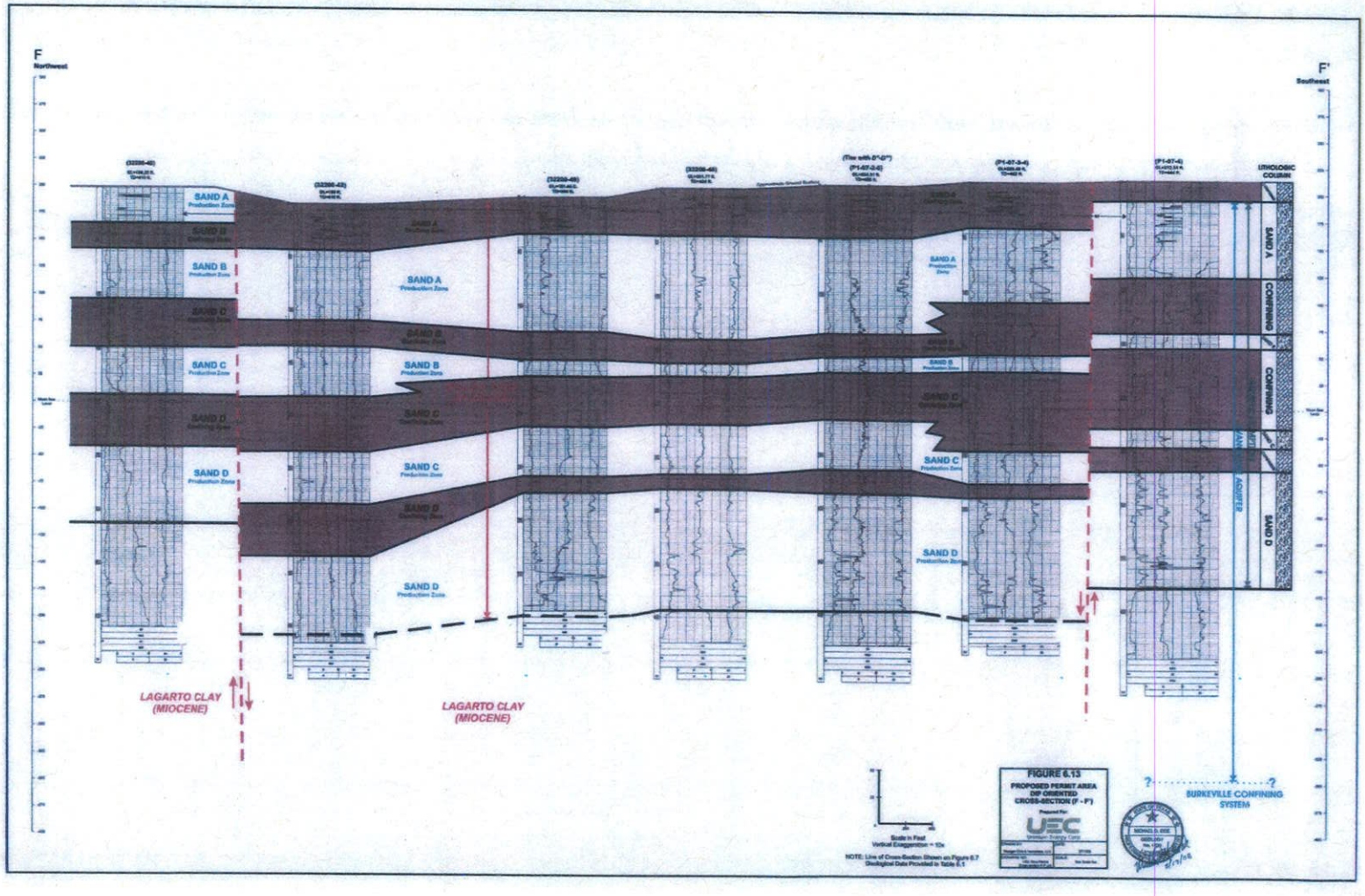

C
Northwest
C'
Southeast
SAND A
SAND B
SAND C
SAND D
GOLIAD SAND
(PLIOCENE)
LAGARTO CLAY
(MIOCENE)
LAGARTO
CLAY
(MIOCENE)
LITHOLOGIC
COLUMN
SURVEILLE CONFINING
SYSTEM
FIGURE E.10
UEC


D
West
D'
East
SAND A
SAND B
SAND C
SAND D
GOLIAD SAND (PLIOCENE)
LAGARTO CLAY (MIOCENE)
LAGARTO CLAY (MIOCENE)
LITHOLOGIC COLUMN
CONFINING
SAND A
CONFINING
SAND B
SAND C
CONFINING
SAND D
?
?
BURKEVILLE CONFINING SYSTEM
FIGURE 6.11a
PROPOSED PERMIT AREA
STRIKE ORIENTED
CROSS-SECTION (D-D')
Part 1 of 2
Prepared for
USEC
EDWARD G. HOE
GEOLOGY
7/7/10


D'
West
D''
East
(Tie with E - E')
LITHOLOGIC COLUMN
SAND A
SAND A Production Zone
SAND B
SAND B Production Zone
SAND C
SAND C Production Zone
SAND D
SAND D Production Zone
CONFINING
LAGARTO CLAY
(MIOCENE)
?
?
BURKEVILLE CONFINING SYSTEM
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 4.7
Geological Data Provided in Table 6.1
FIGURE 6.11b
PROPOSED PERMIT AREA
STRIKE ORIENTED
CROSS-SECTION (D' - D'')
Part 2 of 3
Prepared For:
UEC
Louisiana Energy, LLC


D''
West
D'''
East
SAND A
Confining Zone
SAND A
Production Zone
SAND B
Confining Zone
SAND B
Production Zone
SAND C
Confining Zone
SAND C
Production Zone
SAND D
Confining Zone
SAND D
Production Zone
GOLIAD
LAGARTO CLAY
(MIOCENE)
LAGARTO CLAY
(MIOCENE)
LITHOLOGIC
COLUMN
SAND A
CHICOMUO
SAND C
SAND D
EVANGELINE AQUIFER
BURKEVILLE CONFINING
SYSTEM
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 6.7
Geological Data Provided in Table 6.1
FIGURE 6.11c
PROPOSED PERSEY AREA
STRIKE ORIENTED
CROSS-SECTION (D''-D''')
Part 3 of 3
Prepared For:
UEC
Uranium Energy Corp
MICHAEL G. SEC


E
Northeast
E'
Southeast
SAND A
Production Zone
SAND B
Production Zone
SAND C
Production Zone
SAND D
Production Zone
LAGARTO CLAY
(MIOCENE)
LAGARTO CLAY
(MIOCENE)
LAGARTO CLAY
(MIOCENE)
LITHOLOGIC COLUMN
SAND A
CONFINING
SAND B
CONFINING
SAND C
SAND D
?
SUWANNEE CONFINING SYSTEM
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 6.7
Geological Data Provided in Table 6.1
FIGURE 6.12
PROPOSED PERMIT AREA
DIP ORIENTED
CROSS-SECTION (E - E')
Prepared For:
UEC


F
Northwest
F'
Southeast
SAND A
Production Zone
SAND B
Confining Zone
SAND B
Production Zone
SAND C
Confining Zone
SAND C
Production Zone
SAND D
Confining Zone
SAND D
Production Zone
LAGARTO CLAY
(MIOCENE)
LAGARTO CLAY
(MIOCENE)
LITHOLOGIC COLUMN
SAND A
CONFINING
CONFINING
SAND D
BURKEVILLE CONFINING SYSTEM
Scale in Feet
Vertical Exaggeration = 10x
NOTE: Line of Cross-Section Shown on Figure 6.7
Geological Data Provided in Table 6.1
FIGURE 6.13
PROPOSED PERMIT AREA
DIP ORIENTED
CROSS-SECTION (F - F')
UEC

Topics of Discussion for Technical Goliad Aquifer Exemption Meeting

Stacey Dwyer to: Harry Anthony, charles.maguire, brent.wade 08/14/2012 11:25 AM
Cc: Andy Barrett, William Honker, Wren Stenger, Philip Dellinger, David Gillespie

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To: Harry Anthony <hanthony@uraniumenergy.com>, charles.maguire@tceq.texas.gov, brent.wade@tceq.texas.gov
Cc: Andy Barrett <Andy@thebarrettfirm.com>, William Honker/R6/USEPA/US@EPA, Wren Stenger/R6/USEPA/US@EPA, Philip Dellinger/R6/USEPA/US@EPA, David Gillespie/R6/USEPA/US@EPA

GoliadAquiferExemptionMeetingAgenda 2012 August 16 final.docx ---- EPA Topics of Discussion

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Thank you,

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Associate Director
Source Water Protection Branch
U.S. EPA Region 6
214-665-6729 phone
214-665-2191 fax

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Wren Stenger- Acting Deputy Division Director, Water Quality
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David Gillespie- Assistant Regional Counsel
Philip Dellinger- Chief, UIC/GW Section
Ray Leissner- Engineer

Scott Ellinger- Hydrologist

TCEQ
Charles Maguire- Director, Radioactive Materials

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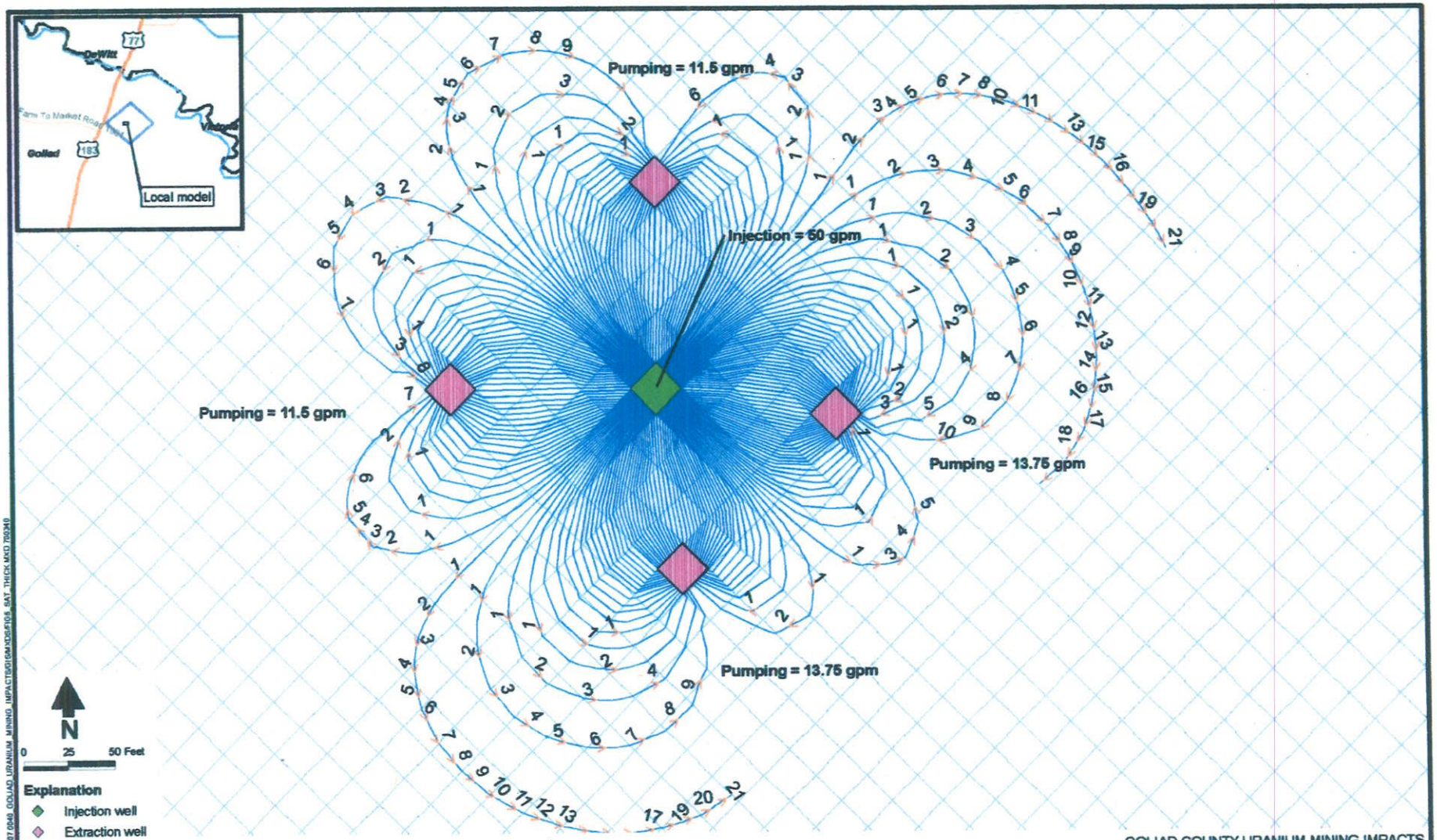

GOLIAD COUNTY URANIUM MINING IMPACTS

Simulated Travel Paths of Injected Fluids

Evangeline Layer 1

Figure 5

Daniel B. Stephens & Associates, Inc.
04/17/2007
JN WR07.0040

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Test	Radium	RBLB 1,3,4,5 (PCi/l)	PTW 1-6 (PCi/l)	PTW 7-14 (PCi/l)	ALL WELLS (PCi/l)
First Test	Average	408	138	475	334
	High	1091	357	1684	1684
	Low	37	17	10	10
	Stand. Dev.	480	138	561	426
Second Test	Average	627	185	537	421
	High	1210	549	2000	2000
	Low	87	17	65	17
	Stand. Dev.	477	205	653	491
Third Test	Average	692	227	465	419
	High	1500	830	1590	1590
	Low	85	10	63	10
	Stand. Dev.	597	314	509	468

Test	Uranium	RBLB 1,3,4,5 (mg/l)	PTW 1-6 (mg/l)	PTW 7-14 (mg/l)	ALL WELLS (mg/l)
First Test	Average	0.052	0.021	0.218	0.115
	High	0.080	0.059	0.804	0.804
	Low	0.006	0.009	0.099	0.006
	Stand. Dev.	0.032	0.021	0.239	0.181
Second Test	Average	0.057	0.024	0.020	0.029
	High	0.150	0.090	0.019	0.150
	Low	0.004	0.003	0.005	0.003
	Stand. Dev.	0.069	0.034	0.021	0.040
Third Test	Average	0.007	0.003	0.005	0.005
	High	0.013	0.004	0.010	0.013
	Low	0.003	0.003	0.003	0.003
	Stand. Dev.	0.004	0.003	0.003	0.003

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THE GOLIAD COUNTY GROUNDWATER CONSERVATION DISTRICT
PRESENTATION TO
THE ENVIRONMENTAL PROTECTION AGENCY
AUGUST 6, 2012

On November 6, 2001, Goliad County residents approved the formation of a Groundwater Conservation District, GCGCD. The purpose of the District is to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, in accordance with Chapter 36, State Water Code.

The Directors of GCGCD thank you for the opportunity to meet with you today to continue the dialogue in reference to the proposed uranium mining permit UR-03075 and the associated aquifer exemption.

With the issuance of the draft permit for public comment by TCEQ, many area residents and organizations responded with questions and comments. As noted in our previous letter, TCEQ issued 188 responses to approximately 350 comments. Today's meeting focuses on the protection of the drinking water for residents located in close proximity outside of the aquifer exemption boundary. In the TCEQ response #13, it states that "Individuals may protect their rights by contacting local law enforcement or seeking redress in a civil proceeding". GCGCD supports the position of the EPA that modeling should be done to provide a thorough technical analysis of the project. Protection through a civil proceeding is not a practical solution.

In reference to attachment 1, please note that there are a number of residences that ring the perimeter of the requested aquifer exemption. There are 18 residences and 1 church in the first segment, followed by many more expanding outward. A special note about the church is that it does not only function as a religious place but also as a community center. Many social activities such as birthday parties and family reunions are held at the church hall. GCGCD does not have the legal description of the aquifer exemption boundary, but by using to scale maps supplied with the permit application, the distance to these drinking water supply wells is approximately 1000 to 3000 feet.

In looking at directional migration of the groundwater in the area of the requested aquifer exemption, using the regional migration of groundwater from north-west to south-east only, may not be accurate. A review of the cross-sections provided in the permit application shows considerable variability in elevations and thickness of the aquifer sands. At the fault lines, there are vertical connections from one sand zone to another. The model presented by UEC during the contested case hearing also showed localized groundwater flow being somewhat vertical to the regional flow direction. The above data does not support a homogeneous flow pattern. There may be preferential flow patterns. This is further support for the request of doing a groundwater transport model.

A potential groundwater transport issue was discussed during the contested case hearing that can not be ignored. Evaluate an event where a landowner, located outside the aquifer exemption area, approached GCGCD for a permit to install a high production well such as an irrigation well. Abiding by the production limits set by the District and using the groundwater for a beneficial use, this potential permit would be issued. During the hearing, the modeler for UEC was asked about this hypothetical situation and he replied that "I would definitely not like to have pumping right in the near vicinity of my baseline monitoring wells". The discussion was about a hypothetical situation but there are a number of existing domestic and livestock supply wells that currently pump in the near vicinity that need to be fully integrated in a groundwater transport model.

I would like to spend a few minutes discussing several related water quality questions. What was the real before exploration water quality inside the aquifer exemption area? What are the real baseline values that should apply to restoration? With the acknowledgement by TCEQ that no previous uranium mining operation has completely restored water to baseline values, what should be done?

Of the 18 residences and 1 church noted in the first segment, GCGCD has been testing water quality of 4 of the residences and the 1 church for five years, see attachment 2. The constituents for the individual wells have shown very little variability.

Referring to attachment 3 a and b, these are the test results for the baseline and pump test wells located inside the aquifer exemption area. The first samples were taken in April 2008, the second in July 2009, and the third in November 2009. The first samples were taken shortly after the wells were completed in exploration borehole drilling was in progress. Please note that the uranium values were the highest in the first set of samples and 18 months later the uranium values had dropped and were now within drinking water standards. For the same wells and test dates, the radium values did not decline. What happened to cause this large variability?

Daniel B. Stephens & Associates provided expert hydrology testimony for GCGCD during the contested case hearing and had previously modeled a typical five spot uranium injection/extraction operation water flow diagram, attachment 4. GCGCD has contacted Daniel B. Stephens in reference to the modeling proposed by the EPA. They have provided a proposal to do an initial cost-effective analysis. This analysis will use currently available information concerning hydraulic gradient, hydraulic conductivity and effective porosity for the purpose of calculating straight line travel time migration values from the aquifer exemption area to the area water wells. This study will cost approximately $9,000. GCGCD will consider providing this study if it will be used.